

REMARKS

This application has been reviewed in light of the Office Action dated May 24, 2005. Claims 1-16, 18-20, 22-33 and 35-45 are presented for examination. Claims 18 and 31 have been amended to define still more clearly what Applicants regard as their invention. Claims 1, 14, 18 and 31 are in independent form. Favorable reconsideration is requested.

The specification has been amended to conform the Summary of Invention section to the amended claims.

Applicants note with appreciation the allowance of Claims 1-16, and the indication that Claims 20, 26-30, 33 and 39- 43¹ would be allowable if rewritten so as not to depend from a rejected claim. The latter claims have not been so rewritten because, for the reasons given below, the respective base claim of each is believed to be allowable.

Claims 18, 19, 22-25, 31, 32, 35-38, 44 and 45 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Japanese Patent Application Laid Open No. 9-96769 (Endo) in view of Japanese Patent Application Laid Open No. 11-64759 (Toyoda). Claims 29, 30, 42 and 43² have been rejected under 35 U.S.C. § 103(a) as being upatentable over Endo as modified by Toyoda, and further in view of U.S. Patent No. 5,982,508 (Kashihara). Claims 18, 19, 22-25, 31, 32, 35-38, 44 and 45 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Japanese Patent Application Laid Open No. 6-

¹/ Claims 29 and 30 as depending from Claims 20 and 26-28 are allowable; and Claims 42 and 43 as depending from Claims 33 and 39-41 are allowable.

²/ Claims 29 and 30 as depending from 18, 19 and 22-25 are rejected; and Claims 42 and 43 as depending from Claims 31, 32 and 35-38 are rejected.

230300 (Saito) in view of Toyoda. Claims 29, 30, 42 and 43³ are rejected under 35 U.S.C. § 103(a) as being unpatentable over Saito as modified by Toyoda, and further in view of Kashihara. Claims 29 and 30⁴ are rejected under 35 U.S.C. § 103(a) as being upatentable over Saito as modified by Toyoda, and further in view of Kashihara.

As shown above, Applicants have amended independent Claims 18 and 31 in terms that more clearly define what they regard as their invention. Applicants submit that these amended independent claims, together with the remaining claims dependent thereon, are patentably distinct from the cited prior art for at least the following reasons.

Claim 18 is directed to an optical scanning apparatus including: (1) a laser unit having a laser source and an optical element configured to emit a substantially parallel beam of light; (2) an incident optical system arranged to direct the light beam emerging from the laser unit to strike an optical deflector while maintaining a width of the light beam wider than a width of a deflecting surface of the optical deflector in a main scanning direction; and (3) an imaging optical system for forming the light beam deflected by the optical deflector into an image on a scanned surface. The laser unit is adapted to be moved in the main scanning direction without changing a direction of an optical axis of the incident optical system so as to make an illuminance distribution of scanning lines on the scanned surface become substantially symmetrical about a scanning central axis.

3/ Claims 29 and 30 as depending from Claims 18, 19 and 22-25 are rejected; and Claims 42 and 43 as depending from Claims 31, 32 and 35-38 are rejected.

4/ Claims 29 and 30 as depending from Claims 18, 19 and 22-25 are rejected.

Endo does not teach or suggest all of these features and, from the Office Action, it is understood that the Examiner does not disagree.

As discussed in the present specification, Endo relates to a technique of correcting the asymmetry of a light amount distribution by shifting or tilting a light source in the main scanning direction with respect to a collimator lens. The light source is shifted from the optical axis of the collimator lens to cause a parallel light beam emerging from the collimator lens to emerge obliquely with respect to the optical axis of the collimator lens. With this operation, the light beam incident on a polygon surface is shifted in the main scanning direction, thereby making an adjustment such that the center of the intensity distribution of the light beam coincides with the center of the polygon surface.

As discussed on page 3, lines 10-23 of the present specification, in this method, since the light source is moved relative to the collimator lens, a field angle is set, and a focus error occurs at the same time. The influences of these phenomena are enhanced as the focal length of the collimator lens is decreased to increase the use efficiency of light from the light source. In general, the focus adjustment sensitivity in the main scanning direction is proportional to the square of the lateral magnification of the overall system, and the focus adjustment precision of the light source and collimator lens is about 5 μm . To prevent a focus error in the light source, a high mechanical precision is required, resulting in an increase in cost.

Endo discusses shifting the light source in parallel in the main scanning direction without shifting in parallel the collimator lens in the main scanning direction. However, Applicants submit that nothing has been found in Endo that would teach or suggest

a laser unit adapted to be moved in the main scanning direction without changing a direction of an optical axis of the incident optical system so as to make an illuminance distribution of scanning lines on the scanned surface become substantially symmetrical about a scanning central axis, as recited in Claim 18.

Thus, for at least the above reasons, Applicants believe that Claim 18 is patentable over Endo, taken alone.

Further, even if Toyoda is deemed to show all that it is cited for, that would not supply what that is missing from Endo as a reference against Claim 18 (even assuming for argument's sake that the combination of these two references would be a proper one).

Saito relates to an optical scanning device in which the unit including the light source and optical element is moved in the optical axis direction of the incident optical system, and is not moved in the main scanning direction, as is the laser unit of Claim 18. Further, the system of Saito is an "Under Field Optical System," not an "Over Field Optical System." Thus, Applicants' submit that Saito does not teach or suggest a laser unit adapted to be moved in the main scanning direction without changing a direction of an optical axis of the incident optical system so as to make an illuminance distribution of scanning lines on the scanned surface become substantially symmetrical about a scanning central axis, as recited in Claim 18.

Thus, for at least the above reasons, Applicants' believe that Claim 18 is patentable over Saito, taken alone.

Further, even if Toyoda is deemed to show all that it is cited for, that would not supply what that is missing from Saito as a reference against Claim 18 (even assuming for

argument's sake that the combination of these two references would be a proper one).

Independent Claim 31 is a method claim corresponding to apparatus Claim 18, and is believed to be patentable over the cited art for at least the same reasons as discussed above in connection with Claim 18.

A review of the other art of record has failed to reveal anything which, in Applicants' opinion, would remedy the deficiencies of the art discussed above, as references against the independent claims herein. Those claims are, therefore, believed patentable over the art of record.

The other claims in this application are each dependent from one or another of the independent claims discussed above and are therefore believed patentable for the same reasons. Since each dependent claim is also deemed to define an additional aspect of the invention, however, the individual reconsideration of the patentability of each on its own merits is respectfully requested.

In view of the foregoing amendments and remarks, Applicants respectfully request favorable reconsideration and early passage to issue of the present application.

Applicants' undersigned attorney may be reached in our New York office by telephone at (212) 218-2100. All correspondence should continue to be directed to our below listed address.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Leonard P. Diana", written over a horizontal line.

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